(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 181 638 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
11.04.2012 Bulletin 2012/15

(51) Int Cl.:
A47L 15/50 *(2006.01)*

(21) Application number: **08019207.3**

(22) Date of filing: **03.11.2008**

(54) **Foldable dishwasher basket**

Zusammenklappbarer Spülmaschinenkorb

Panier de lave-vaisselle pliable

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

(43) Date of publication of application:
05.05.2010 Bulletin 2010/18

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Description

[0001] The invention relates to a foldable dishwasher basket.

[0002] Many of the known baskets, especially dishwasher baskets, are made of a wire mesh, which is entirely manufactured and assembled by the basket suppliers. The appearance of such baskets is comparable to an open box, which means that they take up very much room and thus are quite expensive for transportation. Some other baskets are designed to be stackable, but in case of dishwasher baskets it is, in the most cases, impossible due to the various number of prongs and racks integrated inside the baskets.

[0003] DE 201 02 169 U1 discloses a basket, which is designated to hold the items to be washed in a dish washer for home use, especially with plates and glasses, and which comprises a bottom side and edges which consist of a large number of bars.

[0004] IT 53045 discloses a dishwasher basket comprising a base mesh embossed in plastic and reinforced by steel bars, lateral wings of the same mesh type and hinged to the four sides of the base mesh.

[0005] DE 10 2004 060 951 A1 discloses a dishwasher basket for a dishwasher with a base frame, consisting of a base plane, with an edge protruding upwards at at least one side, where the edge protruding upwards extends at least the height of the spikes of the dishwasher basket showing upwards and, eventually, the height of the dish parts arranged in at least one dish basket towards the top.

[0006] US 6,349,877 B1 discloses a tote box which is assembled from a box blank, corner enhancers and a self-locking top rail, wherein when folded into the appropriate shape, the box results in a bottom, two opposed end walls, and two opposed side walls and said top rail which is channel shaped extends around the top edge of the tote box to hold the erected box blank in an assembled relationship and to reinforce the top edge of the tote box.

[0007] Thus, it is an object of the invention, to provide a dishwasher basket design that allows flexibility and to reduce costs, especially transportation costs.

[0008] This object is solved by a foldable dishwasher basket here after referred to as foldable basket according to claim 1. Advantageous embodiments are described especially in the dependent claims.

[0009] According to claim 1, the foldable dishwasher basket comprises

a) a, particularly at least substantially rectangular, base mesh and

b) at least two, in particular four, foldable, bendable or hinged side meshes,

c) wherein each foldable, bendable or hinged side mesh is rotatably, preferably by at least one hinge element, foldably or bendably connected or connectable to the base mesh,

d) wherein each side mesh comprises, based on an upright orientation of the side mesh, an upper edge,

e) wherein the side meshes are fixed in their upright orientation by at least one fixing element which extends at least substantially along, preferably around, the upper edges of the side meshes.

[0010] The foldable basket according to the invention allows to provide a basket design that allows flexibility and reduces transportation costs. For example, the foldable basket according to the invention needs less space during storage and transportation, which saves costs, as storage and transportation costs depend on the required space. Furthermore, the foldable basket according to the invention can be unfolded at an largely arbitrary time, for example when mounting the basket into a dishwasher, so that it also has a high degree of flexibility.

[0011] Preferably, the fixing element is or comprises at least one fixation wire, wherein at least one side mesh comprises at least one side wire extending, preferably perpendicularly, towards and/or beyond the upper edge of the side mesh, wherein preferably the at least one fixation wire is formed like an at least substantially rectangular loop and surrounds the side meshes along their upper edges and is clippable over at least one, especially upper, end of the at least one side wire. A fixation wire is at least relatively easy and cheap to produce and to handle, furthermore it at least substantially does not affect the functionality of the basket, for example as it at least normally needs only little space.

[0012] Preferably, the foldable basket, especially at least one side mesh and/or the base mesh, comprises at least one wire, where the at least one wire is made out of metal, plastics or metal with a plastic coating or another material or combination of different materials. Preferably, the wire has a round, especially circular cross section.

[0013] In an advantageous embodiment, a frame that is fixable to the upper edge of at least one side mesh for fixation thereof in the upright position, wherein the frame comprises a groove for clipping fixation onto the upper edge of the at least one side mesh, wherein the frame preferably comprises at least one bottom lid which can be bent inwards to cover at least a substantial part of the groove and/or the gap formed by the groove. A groove for clipping fixation allows a stable and, at the same time, easy fixing and at least substantially does not effect the functionality of the basket. A bottom lid which can be bent inwards is able to cover at least parts of the groove and/or the gap formed by the groove and therefore to protect the remaining opening of the groove from dirt, water or other substances

[0014] Preferably, the side mesh comprises at least one interior side wire extending, preferably perpendicularly, towards and/or beyond the upper edge of the side mesh, wherein the at least one bottom lid comprises at least one cutout which leave(s) open space for the at least one interior side wire. This can improve the closing of the lid, so that a larger fraction of the gap or groove can be covered.

[0015] In an advantageous embodiment, the at least one side mesh is hold in its upright orientation by at least one snapping connection or clipping connection, wherein preferably at least one base wire or side wire is used as a snapping or clipping part. A snapping connection or clipping connection is an advantageous connection, as the parts, on the one hand are at least relatively easy to connect and, on the other hand, an at least relatively stable and/or durable connection is formed. Furthermore, it is normally at least relatively easy to separate the connection again.

[0016] Preferably, the base mesh comprises

a1) a first base wire at a first edge of the base mesh with a first base wire end,
a2) a second base wire which is perpendicular to the first base wire,
a3) a third base wire at a second edge opposite to the first edge of the base mesh which is parallel to the second base wire,
a4) wherein the third base wire is, with respect to the base mesh, arranged outwards with respect to the second base wire,

wherein the at least one side mesh comprises

b1) a first, lower side wire at a first, lower edge of the side mesh,
b2) a second side wire at a second edge of the side mesh,
b3) a third, upper side wire at a third, upper edge of the side mesh, parallel and opposite to the first side wire and perpendicular to the second side wire,
b3) a forth side wire at a forth edge of the side mesh, perpendicular to the first side wire and preferably parallel and opposite to the second side wire,

wherein preferably the foldable basket comprises at least a first and a second side mesh, wherein the first side mesh is, in an assembled state, at least substantially perpendicular with respect to the second side mesh and with respect to the base mesh and/or wherein preferably the first side wire of the first side mesh is rotatably or foldably or bendably connected to the third base wire of the base mesh.

[0017] In an advantageous embodiment, the side mesh comprises a lower side wire at its lower edge opposite to its upper edge, wherein the lower side wire is clippable over at least one base wire end to fix the side mesh in the upright orientation at the base mesh, wherein preferably a further base wire works as a fixation point for the side mesh in its upright position and/or wherein preferably the lower side wire is fixed to another side wire extending perpendicularly towards or beyond the upper side wire,

d1) wherein preferably the other side wire is bent with an angle, especially at least substantially perpendicular and/or
d2) wherein preferably the other side wire has a hinged end which encompasses a or the further base wire which is preferably parallel to another base wire.

[0018] A connection wherein the lower side wire is clippable over at least one base wire can be produced at least relatively cost-saving, as normally, a smaller number of additional parts is necessary, as the used wires usually are existing anyway so that they preferably only have to be arranged in a different way.

[0019] Preferably, the foldable basket comprises four side meshes, wherein at least two side meshes, especially on opposite sides of the base mesh, are bendably connected with the base mesh and/or wherein at least two side meshes, especially on the remaining opposite sides of the base mesh, are rotatably connected to the base mesh. A bendable connection can establish a very stable connection, as usually, the at least one connecting element is a part which is fixed in both meshes.

[0020] On the other hand, with a rotatable connection, the angle between the meshes can normally adjusted very precisely, which can allow a very accurate manufacturing.

[0021] In an advantageous embodiment, at least two side meshes are arranged or arrangeble at least substantially in the same plane as the base mesh, preferably for storing or transporting, or angular with respect to the base mesh. This can help to reduce the transportation costs further, as the height of the package for the basket can be at least relatively low.

[0022] Preferably, the rotatable connection between the base mesh and the at least one side mesh is realized by a first and a second group of hinges, wherein the first group of hinges comprises hinges which are open to the inside and the second group of hinges comprises hinges which are open to the outside of the base mesh. This can allow an easy manufacturing of the basket, as the side mesh can be fixed to the base mesh by a rotating movement around an vertical axis in the upright orientation of the side mesh.

[0023] In an advantageous embodiment, at least one side mesh comprises at least one side wire extending, preferably perpendicularly, cowards and/or beyond the upper edge of the side mesh, wherein the side wire of the side mesh comprises at least one hinged end, wherein the hinged end is hingable or hinged between two base wires within an at least substantially parallel section, wherein preferably the two base wires have along their at least substantially parallel section such a distance that the hinged end fits in between them so that they form two stopping elements for the hinged end when arranged in the upright position, where the two base wires are preferably at least substantially directly adjacent to the hinged end on opposite sides. This embodiment also allows a manufacturing with at least relatively low costs, as, for the connection, no or at least not many additional parts are necessary.

[0024] The invention will now be described in further details with references to the schematical drawings in which

FIG 1	shows a detail of a foldable basket according to another embodiment of the invention,
FIG 2	shows the embodiment according to FIG 1 in a second arrangement,
FIG 3a and 3b	show another foldable basket according to the invention,
FIG 4	shows basic elements of a basket,
FIG 5a and 5b	show a detail of an embodiment of the foldable basket according to the invention in a first state,
FIG 6a and 6b	show the detail according to FIG 5a and 5b in a second state,
FIG 7	shows the detail according to figures 5a and 5b as well as 6a and 6b in a third state,
FIG 8a, b, 9	show a detail of another embodiment of a foldable basket according to the invention,
FIG 10 to 12	show a detail and a foldable basket according to another embodiment the invention and in which
FIG 13a to 13d	show another foldable basket according to the invention.

[0025] FIG 4 shows basic elements of a basket, especially of a dishwasher basket. The basket comprises a base mesh 2 and four side meshes 3 to 6.

[0026] The base mesh 2 comprises at its first edge or edge area a first base wire 21. At its second edge, which is perpendicular to the first base wire 21, a third base wire 23 is arranged. At its third edge, which is perpendicular to the second base wire 23 and opposed to the first base wire 21, a forth base wire 24 is arranged. At its forth edge, which is perpendicular to the forth base wire 24 and opposed to the third base wire 23, a fifth base wire 25 is arranged. In addition, a second base wire 22 is arranged between and parallel to the third base wire 23 and the fifth base wire 25.

[0027] The first side mesh 3 comprises at its first edge or edge area a first side wire 31. The first side wire 31 is the lower side wire and forms the lower edge of the side mesh, at least when the side mesh is in an upright orientation. At its second edge, which is perpendicular to the first side wire 31, a second side wire 32 is arranged. At its third edge, which is perpendicular to the second side wire 32 and opposed to the first side wire 31, a third side wire 33 is arranged. The third side wire 33 is the upper side wire and forms the upper edge of the side mesh, at least when the side mesh is.in an upright orientation. At its forth edge, which is perpendicular to the third side wire 33 and opposed to the second side wire 32, a forth side wire 34 is arranged.

[0028] Correspondingly, the second side mesh 4 comprises at its first edge or edge area a first side wire 41. At its second edge, which is perpendicular to the first side wire 41, a second side wire 42 is arranged. At its third edge, which is perpendicular to the second side wire 42 and opposed to the first side wire 41, a third side wire 43 is arranged. At its forth edge, which is perpendicular to the third side wire 43 and opposed to the second side wire 42, a forth side wire 44 is arranged.

[0029] Correspondingly, the third side mesh 5 comprises at its first edge or edge area a first side wire 51. At its second edge, which is perpendicular to the first side wire 51, a second side wire 52 is arranged. At its third edge, which is perpendicular to the second side wire 52 and opposed to the first side wire 51, a third side wire 53 is arranged. At its forth edge, which is perpendicular to the third side wire 53 and opposed to the second side wire 52, a forth side wire 54 is arranged.

[0030] The forth side mesh 6 comprises at its first edge or edge area a first side wire 61. At its second edge, which is perpendicular to the first side wire 61, a second side wire 62 is arranged. At its third edge, which is perpendicular to the second side wire 62 and opposed to the first side wire 61, a third side wire 63 is arranged. At its forth edge, which is perpendicular to the third side wire 63 and opposed to the second side wire 62, a forth side wire 64 is arranged.

[0031] When the basket is assembled, the four side meshes 3 to 6 are in their upright positions, whereas the base mesh 2 is in a horizontal position.

[0032] The first side wire 31 of the first side mesh 3, which is horizontal and the lowest side wire in the upright, assembled position of the first side mesh 3 is arranged near or next to the third base wire 23.

[0033] The first side wire 41 of the second side mesh 4, which is horizontal and the lowest side wire in the upright, assembled position of the second side mesh 4 is arranged near or next to the forth base wire 24.

[0034] The first side wire 51 of the third side mesh 5, which is horizontal and the lowest side wire in the upright, assembled position of the third side mesh 5 is arranged near or next to the fifth base wire 25.

[0035] The first side wire 61 of the forth side mesh 6, which is horizontal and the lowest side wire in the upright, assembled position of the forth side mesh 6 is arranged near or next to the first base wire 21.

[0036] The third side wires 33, 43, 53 and 53 of the side meshes 3 to 6 are horizontal and the highest side wires of the respective side meshes.in their upright positions.

[0037] The second side wires 32, 42, 52 and 52 as well as the forth side wires 34, 44; 54 and 54 of the side meshes 3 to 6 are vertical in their upright positions.

[0038] FIG 1 and 2 show a detail of a foldable basket according to the invention, including parts of the side meshes 3, 4 and 5 and, not shown, 6, as well as a base mesh 2.

[0039] In this embodiment, the basket comprises a looped wire 72 with an at least substantially rectangular shape so that it can be clipped over the upper side wires 33, 43, 53 and 63 in their upright positions which form the upper rims the side meshes 3 to 6. For this, the forth side wire 34 of the side mesh 3 comprises, at its outer end, an outward bending 346 for fixing the looped wire 72. For the same purpose, the second side wire 52 of the side mesh 5 comprises, at its outer end, an outward bending 526.

[0040] The remaining vertical side wires can comprise corresponding bendings, which is, however, not shown in the figures.

[0041] From FIG 1 it can be seen, that the looped wire 72 can be clipped over the bending 346 of the forth side wire 34 of the side mesh 3 and over the bending 526 of the second side wire 52 of the base mesh 5 in their upright positions and, which is not shown in FIG 1, preferably over corresponding bendings of the remaining horizontal side wires, which are arranged also in their upright positions.

[0042] After clipping the looped wire 72 over the side wires, which is shown partly in FIG 2, the looped wire 72 is arranged adjacent to the third side wires 33, 43, 53 and 63 of side meshes 3, 4, 5 and 6. The bendings 346 and 526 can preferably be made in a way that they return to their original position after clipping the looped wire 72 over them.

[0043] FIG 3a and b show other embodiments of a foldable basket according to the invention, with a base mesh 2 and side meshes 3 to 6. The connection of the side meshes 3 to 6 is accomplished by an at least substantially rectangular frame 8 which comprises four sides 83 to 86 where each side 83 to 86 comprises a groove along its bottom side to incorporate the side wires 33, 43, 53 and 63, respectively. Each side mesh 3 to 6 comprises side wires 32, 42, 52, 62, 34, 44, 54 and 64, respectively, at its horizontal edges as well as side meshes 371 to 374, 471 to 474, 571 to 574 and 671 to 674, respectively, in between them.

[0044] In addition, each side 83 to 86 comprises a bottom lid 836 to 876 at its outer bottom side where each bottom lid comprises four recesses 831 to 834, 841 to 844, 851 to 854.and 861 to 864, respectively. The recesses 831 to 834, 841 to 844, 851 to 854 and 861 to 864, respectively, have the same distance from the edges as the corresponding side meshes 371 to 374, 471 to 474, 571 to 574 and 671 to 674, respectively.

[0045] When the frame 8 is clipped on the basket, the bottom lids 836 to 876 are bent inwards so that the recesses 831 to 834, 841 to 844, 851 to 854 and 861 to 864, respectively, are filled out by the side meshes side 371 to 374, 471 to 474, 571 to 574 and 671 to 674, respectively.

[0046] FIG 3b shows a cross section through the part 83.

[0047] FIG 5a to 7 show details of a foldable basket according to the invention. The figures show a part of a base mesh 2 and a part of a side mesh 3 which are in communication with each other. The base mesh 2 comprises a first base wire 21 which is perpendicular to a second base wire 22 and a third base wire 23. The base wires 22 and 23 are parallel to each other, whereas the third base wire 23 is, with respect to the not shown center of the base mesh 2, arranged outwards relative to the second base wire 22.

[0048] The side mesh 3 comprises a first side wire 31, which is perpendicular to a second side wire 32. The second side wire 32 comprises two segments 323 and 324 between which a bending 325 with an angle of about 90° is arranged. The bending 325 surrounds the first side wire 31.

[0049] The segment 323 has a hinged end 321 which encompasses the second base wire 22 when it is hooked over the second base wire 22.

[0050] Also, a forth side wire 34 which is parallel to the second side wire 32 can be seen in FIG 5a, where the forth side wire 34 is of the same form as the second side wire 32. Consequently, it also comprises a looped end 341 which also encompasses the second base wire 22 when it is hooked over the second base wire 22.

[0051] However, in the upright position of the side mesh 3, the lower side wire 31 does not necessarily need to be directly adjacent to base wire 23. Alternatively, base wire 23 can be located closer to base wire 22 as well. Ease wire 22 works as a vertical fixation point for the side mesh 3, it guarantees and/or enables the horizontal position of side wire 323. For the stability of the solution it is helpful that base wire 23 is as distant as possible from base wire 22, so that the lever formed by side wire 32 is as long as possible.

[0052] However, wire 31 does not necessarily need to be bent around wire 31. The position of wire 31 regarding wire 324 is at least substantially depending on the geometry of wire end 211. It needs to be in the right position to be able to be clipped over wire end 211.

[0053] FIG 5a and FIG 5b show a part of the side mesh 3 in a position, where its hinged side wire ends 321 and 341 are not hinged over the second base wire 22 of the base mesh 2.

[0054] FIG 6a and FIG 6b show a part of the side mesh 3 in a position; where its hinged side wire ends 341 and, not shown, 321, are hinged over the second base wire 22 of the base mesh 2.

[0055] FIG 7 shows parts of the side mesh 3 in an upright position with respect to the base mesh 2.

[0056] To bring the side mesh 3 into the upright position, the first side wire 31 is clipped over the end portion 211 of the first base wire 21 and the end portion 241 of

the forth base wire 24.

[0057] When the side wire ends 341, and not shown, 321, are hinged over the second base wire 22 of the base mesh 2, the first side wire 31 is arranged parallel and adjacent to the third base wire 23.

[0058] In a tilted position, after clipping the first side wire 31 over the end portion 211 of the first base wire 21 and the end portion 241 of the forth base wire 24, the first side wire 31 could be arranged with distance to the third base wire 23.

[0059] FIG 8a and 8b show a detail of another embodiment of a foldable basket according to the invention with a second side wire 32 of the side mesh 3 and a first base wire 21 of the base mesh. 2 from the side of the base mesh 2. In addition, two parallel base wires 22 and 23 are shown, which are perpendicular with respect to the first base wire 21. The base wires 22 and 23 have a distance which is slightly more than the diameter of.a side wire.

[0060] The second side wire 32 comprises a hooked end 322 which is formed similar like a question mark with its lower part merging onto the second side wire 32. The outer part of the hooked end 322 its curved nearly like a half circle where the end area of the hooked end 322 is directed at least nearly perpendicular with respect to the second side wire 32.

[0061] The hooked end 322 is intended, when a connection with base mesh 2 is to be formed, to be rotated around the third side wire 23 of base mesh 2.

[0062] FIG 8a shows the second side wire 32 in parallel state with respect to the first base wire 21. In this state, the hooked end 322 can be hooked in between the second base wire 22 and the third base wire 23. Therefore, when the base wire 21 and the side wire 32 are pulled away from each other, the hooked end 322 will hold the two wires together. Substantially, in a translational movement, the side wire 32 can only be moved upwards with respect to the base mesh 2.

[0063] FIG 8b shows the second side wire 32 in perpendicular, upright state with respect to the first base wire 21. The hook 322 is now clamped between the second base wire 22 and the third base wire 23 which means that the side wire 32 can be moved translationally in neither direction, only a rotational movement is possible.

[0064] FIG 9 shows the arrangement according to FIG 8b from above the base mesh 2 where, as a further base wire, the forth base wire 24 can be seen which is parallel to the first base wire 21. Another base wire is arranged between the base wires 21 and 24.

[0065] Furthermore, the forth side wire 34 can be seen. It comprises, at its lower end, a hook 342 which is formed like the hook 322. The hook 342 is surrounding the base mesh 23 in the same manner like the hook 322.

[0066] FIG 10 shows a principle of another embodiment of the invention where the base mesh 2 is viewed from the side. It can be seen the first base mesh 21 and, perpendicular, the third base mesh 23. Furthermore, the perpendicular side wires 31 and 32 of side mesh 3 can be seen, where side wire 31 is parallel to base mesh 23.

[0067] outwards of the end of base wire 21, a hook 212 is arranged. The hook 212 starts perpendicular to the first base wire 21 and bends inwards towards the base wire 21, where its outest end is bent into the opposite direction away from the first base wire 21.

[0068] The hook 212 grips around the side mesh 31 and therefore connects the base mesh 2 and the side mesh 3.

[0069] FIG 11 shows a partly assembled basket 1 according to the invention with a base mesh 2 and two separate side meshes 3 and 5 on opposite sides. The two remaining opposite side meshes 4 and 6 are connected integrally and bendably or foldably with the base mesh 2.

[0070] The opposite side meshes 3 and 5 are connected with the base mesh 2 by hooks 233 to 236 and well as 253 to 256, respectively.

[0071] Between side mesh 5 and base mesh 2, a first group 253, 254 of hinges are fixed to the fifth base wire 25 whose openings are oriented to the inside of the base mesh 2. The hinges are formed similar like the hinge 212 shown in FIG 10.

[0072] Furthermore, a second group 255 and 256 of hinges is arranged besides the first group of hinges whose openings are oriented to the outside of the base mesh 2.

[0073] Correspondingly, between side mesh 3 and base mesh 2, a first group 233, 234 of hinges is fixed to the third base wire 23 whose openings are oriented to the outside of the base mesh 2. Furthermore, a second group 235 and 236 of hinges is arranged beside the first group of hinges whose openings are oriented to the inside of the base mesh 2.

[0074] For connecting the base mesh 2 and the side mesh 3, the side mesh 3 is rotated with respect to base mesh 2. The side mesh 3 is positioned with upright orientation with the center of the first, lower side wire 31 over the center of base wire 23, where side wire 31 is rotated with respect to base wire 23 around a rotation axis M which is extending upwardly through the center of side mesh 3.

[0075] After positioning side mesh 3 in such a way, it is rotated clockwise when viewed from above so that the section 311 of side mesh 31 which extends from the rotation axis M to a first end beyond the hooks 233 and 234 is turned inwardly into the hooks 233 and 234 from outwards and the section 312 of side mesh 31 which extends from the rotation axis M to a second end beyond the hooks 235 and 236 is turned outwardly into the hooks 235 and 236 from inwards.

[0076] The side mesh 5 and the base mesh 2 are connected in the same way.

[0077] FIG 12 shows a part of the base mesh 2 according to FIG 11 with parts of the side meshes 3 and 6 and hinges 233 and 234.

[0078] FIG 13a to 13d show another embodiment of a foldable basket 1 which is, in FIG 13d, stapled with two other baskets 1' and 1" .

[0079] FIG 13a shows a base mesh 2 and four side meshes 3 to 6 wherein the four side meshes 3 to 6 are arranged in a transporting and/or storing orientation. The four side meshes 3 to 6 are in the same plane as the base mesh 2.

[0080] FIG 13b shows the foldable basket 1 in an unassembled state, where base 2 and side meshes 3 to 6 are already connected and each side mesh 3 to 6 is tilted with respect to the base mesh 2 from the upright position with an angle of about 30°.

[0081] To assemble the basket 1, the side meshes 3 to 6 are bent into their upright position, which is shown in FIG 13c.

[0082] FIG 13d shows three unassembled baskets 1, 1' and 1" in a stapled state. Each basket 1, 1', 1 " has its side meshes 3 to 6 tilted with respect to the base mesh 2 from the upright position with an angle of about 30° so that the.baskets can be stapled easily and space-savingly.

Reference Signs

[0083]

1	dishwasher basket
2	base mesh
21	first base wire
211, 212	first base wire end
22	second base wire
23	third base wire
233-236	loops
237	cylindric opening
24	forth base wire
241	forth base wire end
25	fifth base wire
253-256	loops
3	side mesh
31	first side wire
318	rectangular leg
32	second side wire
321, 322	hinged second side wire end
323, 324	second side wire segments
325, 326	bendings
33	third side wire
331	hinged third side wire end
332, 333	looped third side wire end
34	forth side wire
341, 342	hinged forth side wire end
371 to 374	side wires
4	side mesh
41	first side wire
42	second side wire
43	third side wire
431	third side wire end
432	bent third side wire end
471 to 474	side wires
5, 6	side meshes
52	second side wire
54	forth side wire
546	bending
571 to 574	side wires 671 to 674 side wires
72	looped wire
8	frame
83 to 86	frame parts
831 to 834, 841	to 844, 851 to 854, 861 to 864 recesses

Claims

1. Foldable dishwasher basket (1), comprising

a) a, particularly at least substantially rectangular, base mesh (2) and
b) at least two, in particular four, foldable, bendable or hinged side meshes (3, 4, 5, 6),
c) wherein each foldable, bendable or hinged side mesh (3, 4, 5, 6) is rotatably, preferably by at least one hinge element, foldably or bendably connected or connectable to the base mesh (2),
d) wherein each side mesh (3) comprises, based on an upright orientation of the side mesh (3), an upper edge,
e) wherein the side meshes are fixed in their upright orientation by at least one fixing element which extends at least substantially along, preferably around, the upper edges of the side meshes.

2. Foldable basket according to claim 1,

a) wherein the fixing element is or comprises at least one fixation wire (72),
b) wherein at least one side mesh (3; 5) comprises at least one side wire (34; 52) extending, preferably perpendicularly, towards and/or beyond the upper edge of the side mesh (3; 5),
c) wherein preferably the at least one fixation wire (72) is formed like an at least substantially rectangular loop and surrounds the side meshes (3, 4, 5, 6) along their upper edges and is clippable over at least one, especially upper, end (346; 526) of the at least one side wire (34; 52).

3. Foldable basket according to one of the preceding claims,

a) with a frame (8) that is fixable to the upper edge (33, 43, 53, 63) of at least one side mesh (3, 4, 5, 6) for fixation thereof in the upright position,
b) wherein the frame (8) comprises a groove for clipping fixation onto the upper edge (33, 43, 53, 63) of the at least one side mesh (3, 4, 5, 6),

c) wherein the frame (8) preferably comprises at least one bottom lid (836, 846, 856 and 866) which can be bent inwards to cover at least a substantial part of the groove.

4. Foldable basket according to one of the preceding claims,

a) where the side mesh (3) comprises at least one interior side wire (371 to 374) extending, preferably perpendicularly, towards and/or beyond the upper edge of the side mesh (3), b) wherein the at least one bottom lid (836 to 876) comprises at least one cutout (831 to 834) which leave(s) open space for the at least one interior side wire (371 to 374).

5. Foldable basket according to one of the preceding claims,

a) wherein the at least one side mesh (3, 4, 5, 6) is hold in its upright orientation by at least one snapping connection or clipping connection,
b) wherein preferably at least one base wire or side wire (31) is used as a snapping or clipping part.

6. Foldable basket according to one of the preceding claims,

a) wherein the base mesh (2) comprises

a1) a first base wire (21) at a first edge of the base mesh (2) with a first base wire end (211),
a2) a second base wire (22) which is perpendicular to the first base wire (21),
a3) a third base wire (23) at a second edge opposite to the first edge of the base mesh (2) which is parallel to the second base wire (22),
a4) wherein the third base wire (23) is, with respect to the base mesh (2), arranged outwards with respect to the second base wire (22),

b) wherein the at least one side mesh (3) comprises

b1) a first, lower side wire (31) at a first, lower edge of the side mesh (3),
b2) a second side wire (32) at a second edge of the side mesh (3),
b3) a third, upper side wire (33) at a third, upper edge of the side mesh, parallel and opposite to the first side wire (31) and perpendicular to the second side wire (32),
b3) a forth side wire (34) at a forth edge of the side mesh, perpendicular to the first side wire (31) and preferably parallel and opposite to the second side wire (32),

c) wherein preferably the foldable basket comprises at least a first (3) and a second (4) side mesh, wherein the first side mesh (3) is, in an assembled state, at least substantially perpendicular with respect to the second side mesh (4) and with respect to the base mesh (2) and/or
d) wherein preferably the first side wire (31) of the first side mesh (3) is rotatably or foldably or bendably connected to the third base wire (23) of the base mesh (2).

7. Foldable basket according to one of the preceding claims,

a) wherein the side mesh comprises a lower side wire (31) at its lower edge opposite to its upper edge,
b) wherein the lower side wire (31) is clippable over at least one base wire end (211) to fix the side mesh in the upright orientation at the base mesh (2),
c) wherein preferably a further base wire (22) works as a fixation point for the side mesh (3) in its upright position and/or
d) wherein preferably the lower side wire (31) is fixed to another side wire (32) extending perpendicularly towards or beyond the upper side wire (33),

d1) wherein preferably the other side wire (32) is bent with an angle, especially at least substantially perpendicular and/or
d2) wherein preferably the other side wire (32) has a hinged end (321) which encompasses a or the further base wire (22) which is preferably parallel to another base wire (23).

8. Foldable basket according to one of the preceding claims,

a) wherein the foldable basket (1) comprises four side meshes (3, 4, 5, 6),
b) wherein at least two side meshes (4, 6), especially on opposite sides of the base mesh (2), are bendably connected with the base mesh (2) and/or
c) wherein at least two side meshes (3, 5), especially on the remaining opposite sides of the base mesh (2), are rotatably connected to the base mesh.

9. Foldable basket according to one of the preceding claims, wherein at least two side meshes (4, 6), are

arranged or arrangable

a) at least substantially in the same plane as the base mesh (2), preferably for storing or transporting, or
b) angular with respect to the base mesh (2).

10. Foldable basket according to one of the preceding claims,

a) wherein the rotatable connection between the base mesh (2) and the at least one side mesh (3, 5) is realized by a first (253, 254) and a second group (255, 256) of hinges,
b) wherein the first group of hinges (253, 254) comprises hinges which are open to the inside and the second group of hinges (255, 256) comprises hinges which are open to the outside of the base mesh (2).

11. Foldable basket according to one of the preceding claims,

a) wherein at least one side mesh (3) comprises at least one side wire (32, 34) extending, preferably perpendicularly, towards and/or beyond the upper edge of the side mesh (3),
b) wherein the side wire (32) of the side mesh (3) comprises at least one hinged end (322),
c) wherein the hinged end (322) is hingable or hinged between two base wires (22, 23) within an at least substantially parallel section,
d) wherein preferably the two base wires (22, 23) have along their at least substantially parallel section such a distance that the hinged end (322) fits in between them so that they form two stopping elements for the hinged end (322) when arranged in the upright position, where the two base wires (22, 23) are preferably at least substantially directly adjacent to the hinged end (322) on opposite sides.

Patentansprüche

1. Klappbarer Geschirrspülmaschinenkorb (1), aufweisend

a) ein, insbesondere mindestens im Wesentlichen rechteckiges Basis-Korbgitter (2) und
b) mindestens zwei, insbesondere vier klappbare, biegbare oder in Scharnieren aufgehängte Seitengitter (3, 4, 5, 6),
c) wobei jedes klappbare, biegbare oder in Scharnieren angelenkte Seitengitter (3, 4, 5, 6) schwenkbar, vorzugsweise durch mindestens ein Scharnierelement, klappbar oder biegbar mit dem Basisgitter (2) verbunden ist oder verbunden werden kann,
d) wobei jedes Seitengitter (3), bezogen auf eine aufrechte Ausrichtung des Seitengitters (3), eine Oberkante aufweist,
e) wobei die Seitengitter in ihrer aufrechten Ausrichtung durch mindestens ein Befestigungselement fixiert sind, welches sich mindestens im Wesentlichen entlang der, vorzugsweise rundum die, Oberkanten der Seitengitter erstreckt.

2. Klappbarer Korb nach Anspruch 1,

a) wobei das Befestigungselement mindestens ein Befestigungsdraht (72) ist oder einen solchen aufweist,
b) wobei mindestens ein Seitengitter (3; 5) mindestens einen Seitendraht (34; 52) aufweist, der sich, vorzugsweise rechtwinklig, in Richtung zur und/oder hinter die obere Kante des Seitengitters (3; 5) erstreckt,
c) wobei vorzugsweise der mindestens eine Befestigungsdraht (2) wie eine im Wesentlichen rechteckig geformte Schleife geformt ist und die Seitengitter (3, 4, 5, 6) entlang derer Oberkanten umgibt und über ein, insbesondere oberes Ende (346; 526) des mindestens einen Seitendrahts (34; 52) einrastbar ist.

3. Klappbarer Korb nach einem der vorhergehenden Ansprüche,

a) mit einem Rahmen (8), der an der Oberkante (33, 43, 53, 63) von mindestens einem Seitengitter (3, 4, 5, 6) für deren Befestigung in der aufrechten Stellung befestigt werden kann.
b) wobei der Rahmen (8) eine Nut für einrastende Befestigung auf der Oberkante (33, 43, 53, 63) von mindestens einem Seitengitter (3, 4, 5, 6) aufweist,
c) wobei der Rahmen vorzugsweise mindestens einen Bodendeckel (836, 846, 856 und 866) aufweist, der nach innen gebogen werden kann, um mindestens einen wesentlichen Teil der Nut zu bedecken.

4. Klappbarer Korb nach einem der vorhergehenden Ansprüche,

a) wobei das Seitengitter mindestens einen inneren Seitendraht (371 bis 374) aufweist, der sich vorzugsweise rechtwinklig in Richtung zur und/oder über die Oberkante des Seitengitters (3) hinaus erstreckt,
b) wobei mindestens ein Bodendeckel (836 bis 876) mindestens einen Ausschnitt (831 bis 834) aufweist, der bzw. die offenen Raum für mindestens einen inneren Seitendraht (371 bis 374) belässt.

5. Klappbarer Korb nach einem der vorhergehenden Ansprüche,

a) wobei das mindestens eine Seitengitter (3, 4, 5, 6) durch mindestens eine Einschnappverbindung oder Rastverbindung in seiner aufrechten Ausrichtung gehalten wird,
b) wobei vorzugsweise mindestens ein Basisdraht oder Seitendraht (31) als Einschnapp- oder Rastteil benutzt wird.

6. Klappbarer Korb nach einem der vorhergehenden Ansprüche,

a) wobei das Basisgitter (2) Folgendes aufweist

a1) einen ersten Basisdraht (21) an einer ersten Kante des Basisgitters (2) mit einem ersten Basisdrahtende (211),
a2) einen zweiten Basisdraht (22) der rechtwinklig zum ersten Basisdraht (21) verläuft,
a3) einen dritten Basisdraht (23) an einer zweiten Kante gegenüber der ersten Kante des Basisgitters (2), der parallel zum zweiten Basisdraht (22) verläuft,
a4) wobei der dritte Basisdraht (23) bezogen auf das Basisgitter (2) nach außen bezogen auf den zweiten Basisdraht (22) angeordnet ist,

b) wobei das mindestens eine Seitengitter (3) Folgendes aufweist,

b1) einen ersten, unteren Seitendraht (31) an einer ersten, unteren Kante des Seitengitters (3),
b2) einen zweiten Seitendraht (32) an einer zweiten Kante des Seitengitters (3), b3) einen dritten, oberen Seitendraht (31) an einer dritten, oberen Kante des Seitengitters, parallel und gegenüberliegend zum ersten Seitendraht (31) und rechtwinklig zum zweiten Seitendraht (32),
b3) einen vierten Seitendraht (34) an der vierten Seite des Seitengitters, rechtwinklig zum ersten Seitendraht (31) und vorzugsweise parallel und gegenüberliegend zum zweiten Seitendraht (32),

c) wobei vorzugsweise der klappbare Korb mindestens ein erstes (3) und ein zweites (4) Seitengitter aufweist, wobei das erste Seitengitter (3) in einem zusammengesetzten Zustand mindestens im Wesentlichen rechtwinklig in Bezug auf das zweite Seitengitter (4) und in Bezug auf das Basisgitter (2) angeordnet ist und/oder
d) wobei vorzugsweise der erste Seitendraht (31) des ersten Seitengitters (3) schwenkbar oder klappbar oder biegbar mit dem dritten Basisdraht (23) des Basisgitters (2) verbunden ist.

7. Klappbarer Korb nach einem der vorhergehenden Ansprüche,

a) wobei das Seitengitter einen unteren Seitendraht (31) an seiner Unterkante gegenüber seiner Oberkante aufweist,
b) wobei der untere Seitendraht (31) aufschnappbar über mindestens ein Basisdrahtende (211) zur Fixierung des Seitengitters in der aufrechten Ausrichtung am Basisgitter (2) ist,
c) wobei vorzugsweise ein weiterer Basisdraht (22) als Befestigungspunkt für das Seitengitter (3) in dessen aufrechter Stellung dient, und/oder
d) wobei vorzugsweise der untere Seitendraht (31) an einem anderem Seitendraht (32) befestigt ist, der sich rechtwinklig in Richtung zum oder über den oberen Seitendraht (33) hinaus erstreckt,

d1) wobei vorzugsweise der andere Seitendraht (32) in einem insbesondere mindestens im Wesentlichen rechtwinkligen Winkel gebogen ist und/oder
d2) wobei vorzugsweise der andere Seitendraht (32) ein angelenktes Ende aufweist, das einen oder den weiteren Basisdraht (22) umfasst, der vorzugsweise parallel zum einem anderen Basisdraht (23) verläuft.

8. Klappbarer Korb nach einem der vorhergehenden Ansprüche,

a) wobei der klappbare Korb (1) vier Seitengitter (3, 4, 5, 6) aufweist,
b) wobei mindestens zwei Seitengitter (4, 6) insbesondere auf gegenüberliegenden Seiten des Basisgitters (2) biegbar mit dem Basisgitter (2) verbunden sind und/oder
c) wobei mindestens zwei Seitengitter (3, 5) insbesondere auf den übrigen gegenüberliegenden Seiten des Basisgitters (2) schwenkbar mit dem Basisgitter verbunden sind.

9. Klappbarer Korb nach einem der vorhergehenden Ansprüche, wobei mindestens zwei Seitengitter (4, 6)

a) mindestens im Wesentlichen auf der gleichen Ebene wie das Basisgitter (2), vorzugsweise für Lagerung oder Transport, oder
b) gewinkelt in Bezug auf das Basisgitter (2) angeordnet sind oder angeordnet werden können.

10. Klappbarer Korb nach einem der vorhergehenden

Ansprüche,

a) wobei die schwenkbare Verbindung zwischen dem Basisgitter (2) und dem mindestens einen Seitengitter (3, 5) mithilfe einer ersten (253, 254) und einer zweiten Gruppe (255, 256) von Scharnieren ausgeführt wird,
b) wobei die erste Gruppe von Scharnieren (253, 254) zur Innenseite des Basisgitters (2) hin geöffnete Scharniere und die zweite Gruppe von Scharnieren (255, 256) zur Außenseite des Basisgitters (2) hin geöffnete Scharniere aufweist.

11. Klappbarer Korb nach einem der vorhergehenden Ansprüche,

a) wobei mindestens ein Seitengitter (3) einen Seitendraht (32, 34) aufweist, der sich vorzugsweise rechtwinklig in Richtung zur und/oder die Oberkante des Seitengitters (3) hinaus erstreckt,
b) wobei der Seitendraht (32) des Seitengitters (3) mindestens ein mit einem Scharnier versehenes Ende (322) aufweist.
c) wobei das mit Scharnier versehene Ende (322) zwischen zwei Basisdrähten (22, 23) innerhalb eines mindestens im Wesentlichen parallelen Abschnitts anlenkbar oder angelenkt ist,
d) wobei vorzugsweise die beiden Basisdrähte (22, 23) entlang ihres mindestens im Wesentlichen parallelen Abschnitts einen solchen Abstand zueinander aufweisen, dass das angelenkte Ende (322) zwischen diesen hineinpasst, so dass diese zwei Anschlagelemente für das angelenkte Ende (322) bilden, wenn sie in einer aufrechten Position angeordnet sind, wenn sich die beiden Basisdrähte (22, 23) vorzugsweise mindestens im Wesentlichen direkt neben dem angelenkten Ende (322) auf gegenüberliegenden Seiten befindet.

Revendications

1. Panier pliable pour lave-vaisselle (1), comprenant

a) un maillage de base (2), en particulier au moins substantiellement rectangulaire, et
b) au moins deux, en particulier quatre, maillages latéraux pliables, flexibles ou articulés (3, 4, 5, 6),
c) où chaque maillage latéral pliable, flexible ou articulé (3, 4, 5, 6) est relié ou reliable de manière pivotable, de préférence par au moins un élément de charnière, de manière pliable ou de manière flexible au maillage de base (2),
d) où chaque maillage latéral (3) comprend, sur la base d'une orientation verticale du maillage latéral (3), un bord supérieur,
e) où les maillages latéraux sont fixés dans leur orientation verticale par au moins un élément de fixation qui s'étire au moins substantiellement le long, de préférence autour, des bords supérieurs des maillages latéraux.

2. Panier pliable selon la revendication 1,

a) où l'élément de fixation est ou comprend au moins un fil de fixation (72),
b) où au moins un maillage latéral (3 ; 5) comprend au moins un fil latéral (34 ; 52) s'étirant, de préférence perpendiculairement, vers et/ou au-delà du bord supérieur du maillage latéral (3 ; 5),
c) où de préférence l'au moins un fil de fixation (72) est formé comme une boucle au moins substantiellement rectangulaire et entoure les maillages latéraux (3, 4, 5, 6) le long de leurs bords supérieurs et est clipsable sur au moins une extrémité (346 ; 526), surtout supérieure, de l'au moins un fil latéral (34 ; 52).

3. Panier pliable selon l'une des revendications précédentes,

a) avec un cadre (8) qui est fixable au bord supérieur (33, 43, 53, 63) d'au moins un maillage latéral (3, 4, 5, 6) pour la fixation de celui-ci dans la position verticale,
b) où le cadre (8) comprend une rainure pour la fixation par clipsage sur le bord supérieur (33, 43, 53, 63) de l'au moins un maillage latéral (3, 4, 5, 6),
c) où le cadre (8) comprend de préférence au moins un couvercle de fond (836, 846, 856 et 866) qui peut être plié vers l'intérieur pour couvrir au moins une partie substantielle de la rainure.

4. Panier pliable selon l'une des revendications précédentes,

a) où le maillage latéral (3) comprend au moins un fil latéral intérieur (371 à 374) s'étirant, de préférence perpendiculairement, vers et/ou au-delà du bord supérieur du maillage latéral (3),
b) où l'au moins un couvercle de fond (836 à 876) comprend au moins une découpe (831 à 834) qui laisse un espace ouvert pour l'au moins un fil latéral intérieur (371 à 374).

5. Panier pliable selon l'une des revendications précédentes,

a) où l'au moins un maillage latéral (3, 4, 5, 6) est maintenu dans son orientation verticale par au moins une connexion par encliquetage ou

connexion par clipsage,
b) où de préférence au moins un fil de base ou fil latéral (31) est utilisé comme une partie d'encliquetage ou clipsage.

6. Panier pliable selon l'une des revendications précédentes,

a) où le maillage de base (2) comprend

a1) un premier fil de base (21) à un premier bord du maillage de base (2) avec une première extrémité de fil de base (211),
a2) un deuxième fil de base (22) qui est perpendiculaire au premier fil de base (21),
a3) un troisième fil de base (23) à un deuxième bord en face du premier bord du maillage de base (2) qui est parallèle au deuxième fil de base (22),
a4) où le troisième fil de base (23) est, par rapport au maillage de base (2), disposé vers l'extérieur par rapport au deuxième fil de base (22),

b) où l'au moins un maillage latéral (3) comprend

b1) un premier fil latéral inférieur (31) à un premier bord inférieur du maillage latéral (3),
b2) un deuxième fil latéral (32) à un deuxième bord du maillage latéral (3),
b3) un troisième fil latéral supérieur (33) à un troisième bord supérieur du maillage latéral, parallèle et en face du premier fil latéral (31) et perpendiculaire au deuxième fil latéral (32),
b3) un quatrième fil latéral (34) à un quatrième bord du maillage latéral, perpendiculaire au premier fil latéral (31) et de préférence parallèle et en face du deuxième fil latéral (32),

c) où de préférence le panier pliable comprend au moins un premier (3) et un deuxième (4) maillage latéral, où le premier maillage latéral (3) est, dans un état assemblé, au moins substantiellement perpendiculaire par rapport au deuxième maillage latéral (4) et par rapport au maillage de base (2) et/ou
d) où de préférence le premier fil latéral (31) du premier maillage latéral (3) est relié de manière pivotable ou pliable ou flexible au troisième fil de base (23) du maillage de base (2).

7. Panier pliable selon l'une des revendications précédentes,

a) où le maillage latéral comprend un fil latéral inférieur (31) à son bord inférieur en face de son bord supérieur,
b) où le fil latéral inférieur (31) est clipsable sur au moins une extrémité de fil de base (211) pour fixer le maillage latéral dans l'orientation verticale au maillage de base (2),
c) où de préférence un ultérieur fil de base (22) sert de point de fixation pour le maillage latéral (3) dans sa position verticale et/ou
d) où de préférence le fil latéral inférieur (31) est fixé à un autre fil latéral (32) s'étirant perpendiculairement vers ou au-delà du fil latéral supérieur (33),

d1) où de préférence l'autre fil latéral (32) est plié avec un angle, surtout au moins substantiellement perpendiculaire et/ou
d2) où de préférence l'autre fil latéral (32) a une extrémité articulée (321) qui englobe un ou l'ultérieur fil de base (22) qui est de préférence parallèle à un autre fil de base (23).

8. Panier pliable selon l'une des revendications précédentes,

a) où le panier pliable (1) comprend quatre maillages latéraux (3, 4, 5, 6),
b) où au moins deux maillages latéraux (4, 6), surtout sur les côtés opposés du maillage de base (2), sont reliés de manière flexible au maillage de base (2) et/ou
c) où au moins deux maillages latéraux (3, 5), surtout sur les côtés opposés restants du maillage de base (2), sont reliés de manière pivotable maillage de base.

9. Panier pliable selon l'une des revendications précédentes, où au moins deux maillages latéraux (4, 6) sont disposés ou peuvent être disposés

a) au moins substantiellement dans le même plan que le maillage de base (2), de préférence pour le stockage ou le transport, ou
b) de manière angulaire par rapport au maillage de base (2).

10. Panier pliable selon l'une des revendications précédentes,

a) où la connexion pivotable entre le maillage de base (2) et l'au moins un maillage latéral (3, 5) est réalisée par un premier (253, 254) et un deuxième groupe (255, 256) de charnières,
b) où le premier groupe de charnières (253, 254) comprend des charnières qui sont ouvertes vers l'intérieur et le deuxième groupe de charnières (255, 256) comprend des charnières qui sont

ouvertes vers l'extérieur du maillage de base (2).

11. Panier pliable selon l'une des revendications précédentes,

a) où au moins un maillage latéral (3) comprend au moins un fil latéral (32, 34) s'étirant, de préférence perpendiculairement, vers et/ou au-delà du bord supérieur du maillage latéral (3),
b) où le fil latéral (32) du maillage latéral (3) comprend au moins une extrémité articulée (322),
c) où l'extrémité articulée (322) est articulable ou articulée entre deux fils de base (22, 23) dans au moins une section substantiellement parallèle,
d) où de préférence les deux fils de base (22, 23) ont, le long de leur section au moins substantiellement parallèle, une distance telle que l'extrémité articulée (322) s'adapte entre eux de sorte qu'ils forment deux éléments de butée pour l'extrémité articulée (322) lors qu'elle est disposée dans la position verticale, où les deux fils de base (22, 23) sont de préférence au moins substantiellement directement adjacents à l'extrémité articulée (322) sur des côtés opposés.

FIG 1

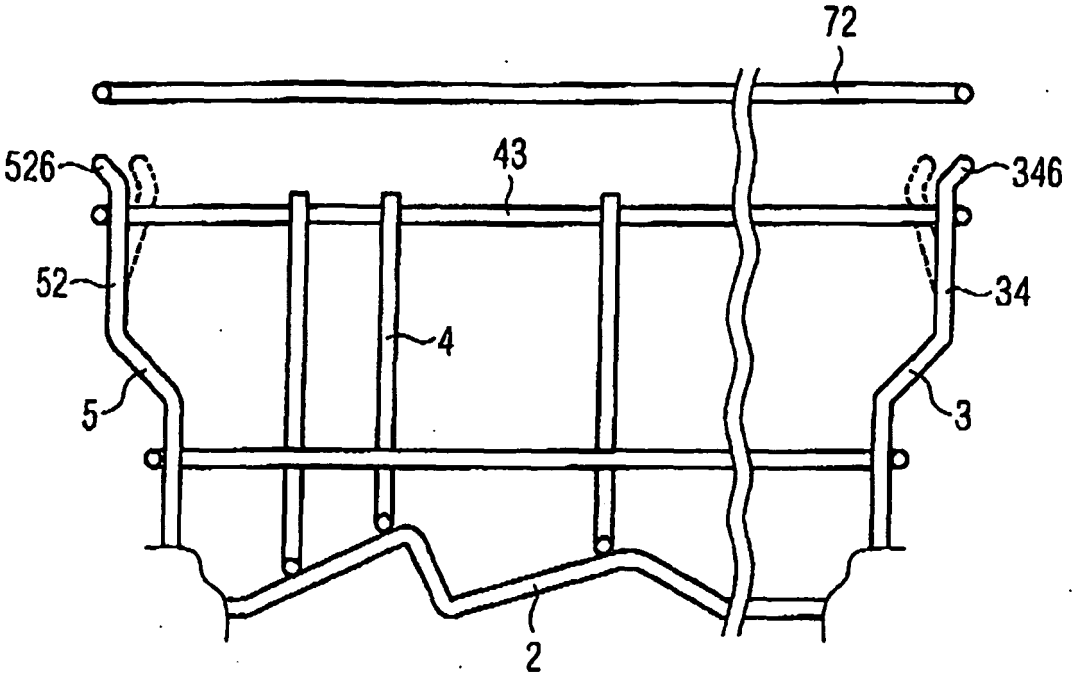


FIG 2

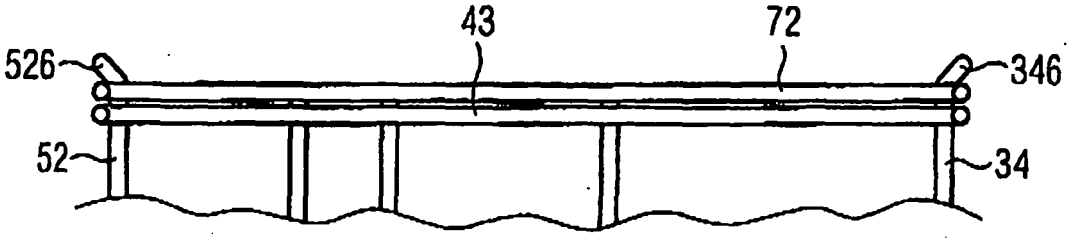


FIG 3a

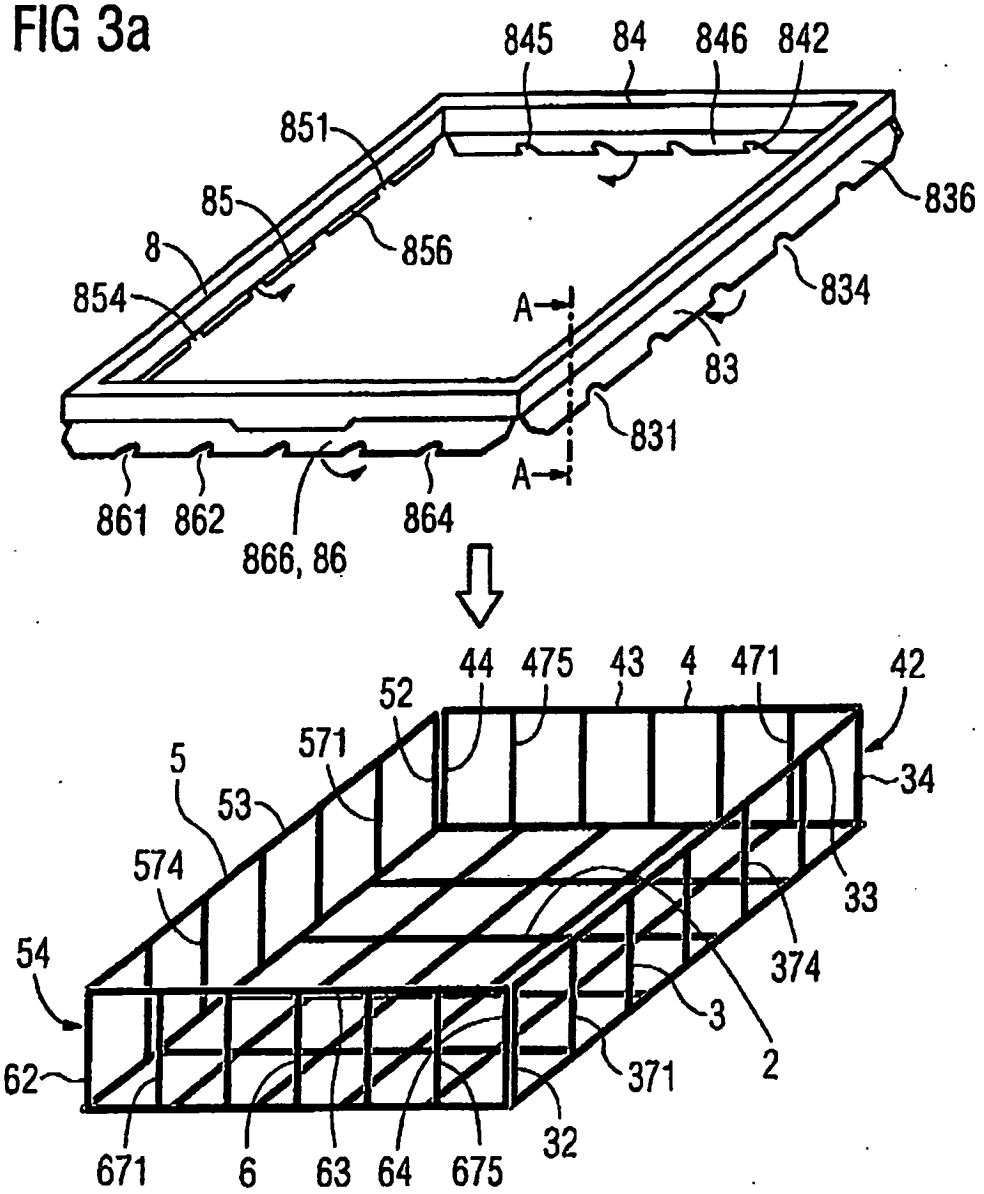


FIG 3b

A-A

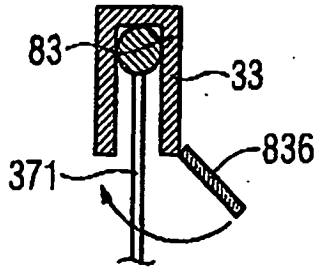


FIG 4

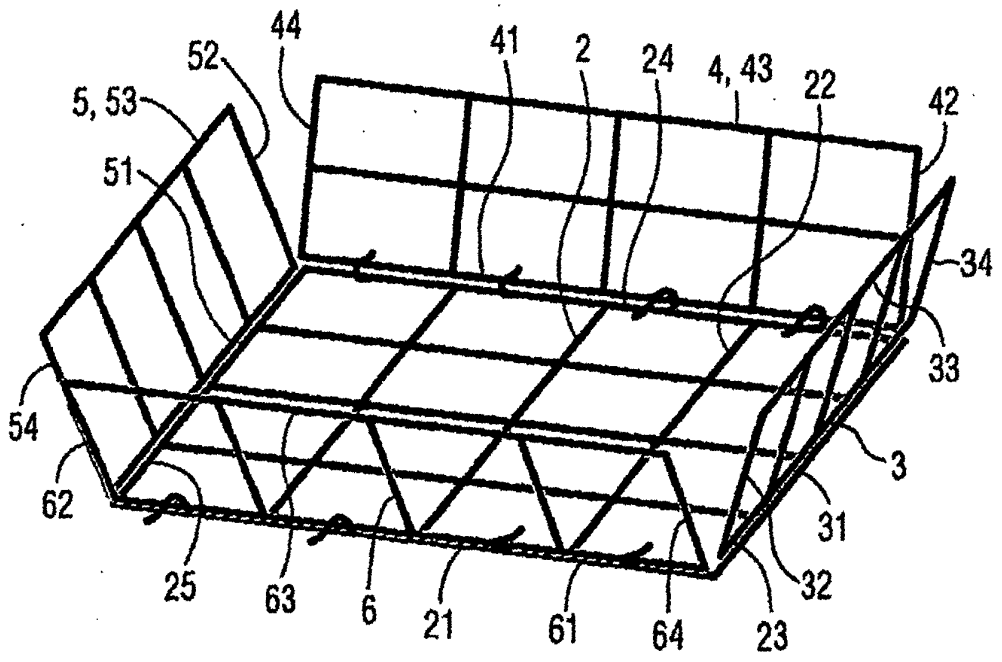


FIG 5a

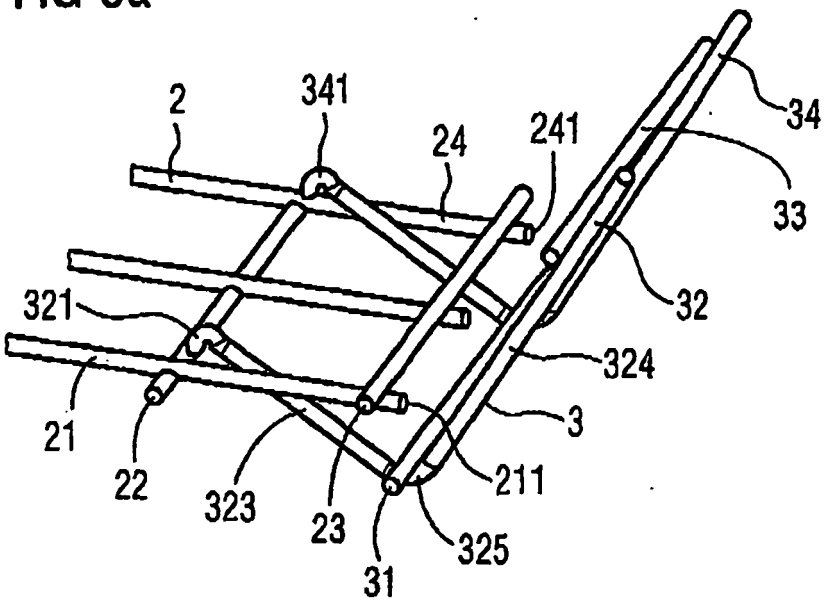

2
341
24
241
34
33
32
321
324
3
21
22
323
23
211
325
31

FIG 5b

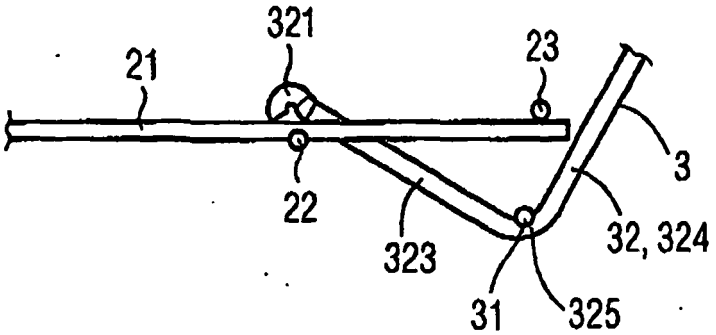

321
21
23
3
22
32, 324
323
31
325

FIG 6a

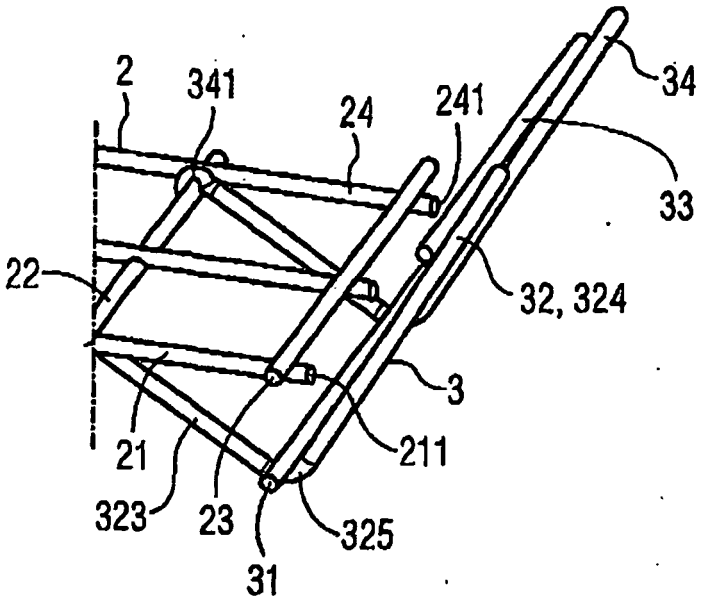
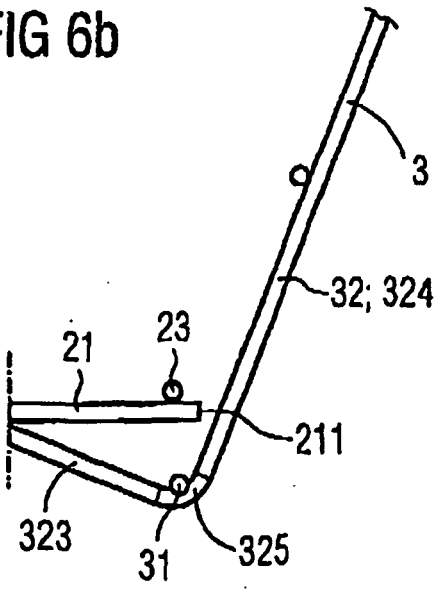

2
341
24
241
34
33
22
32, 324
3
211
21
323
23
325
31

FIG 6b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325

FIG 7

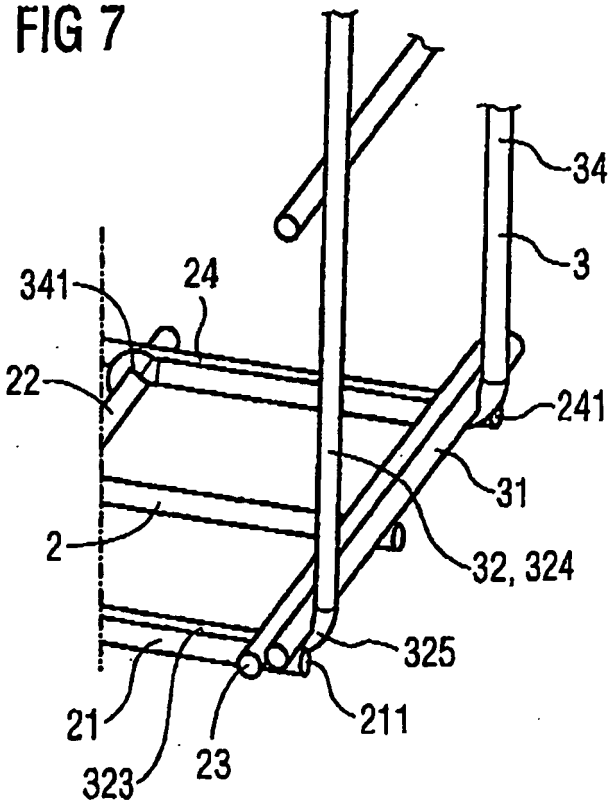


FIG 8a

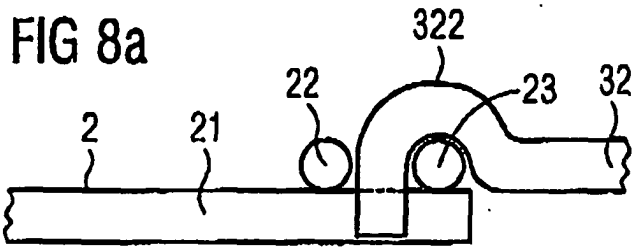


FIG 8b

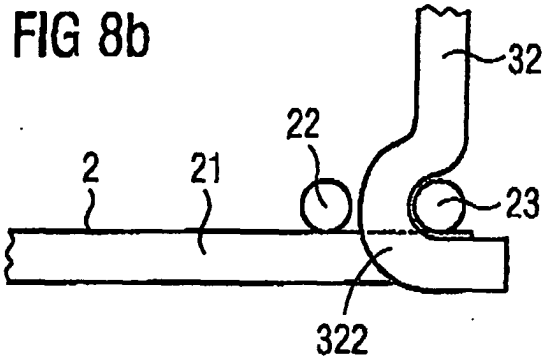


FIG 9

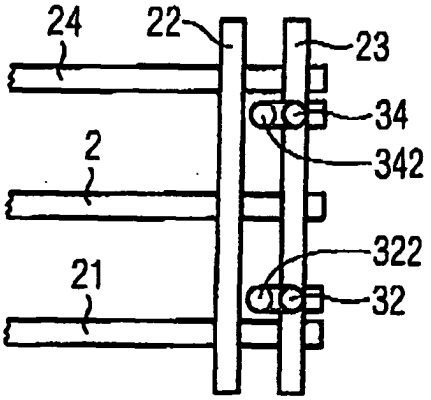


FIG 10

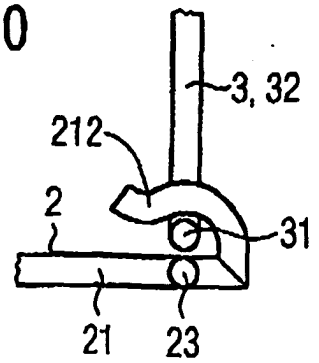
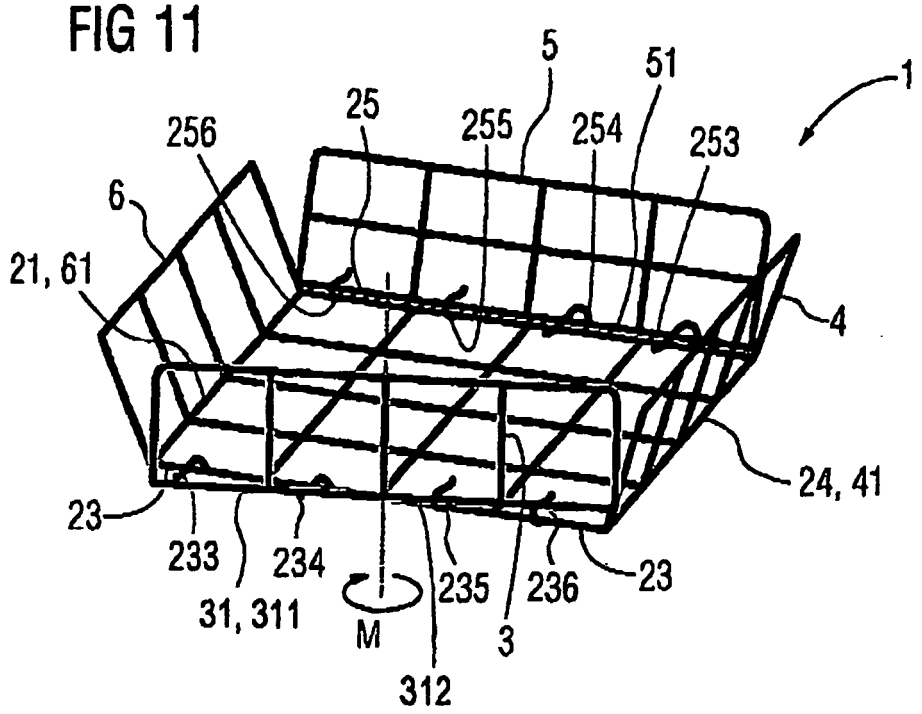


FIG 11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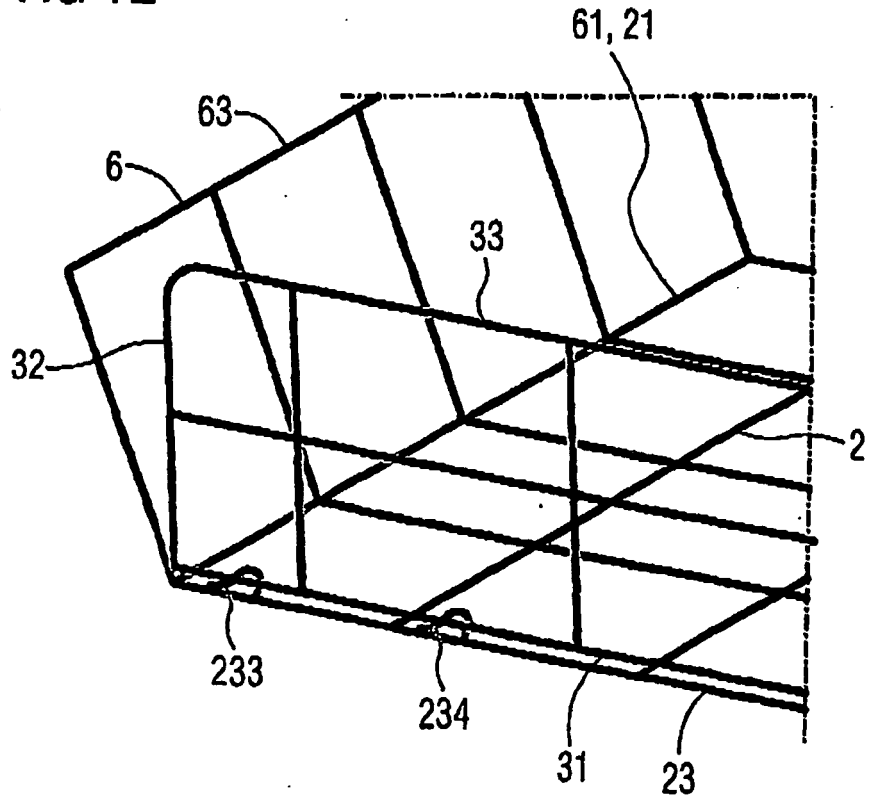
23
31, 311
M
3
312

FIG 12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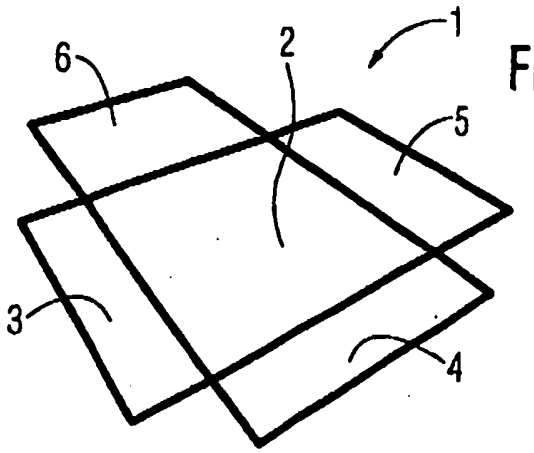
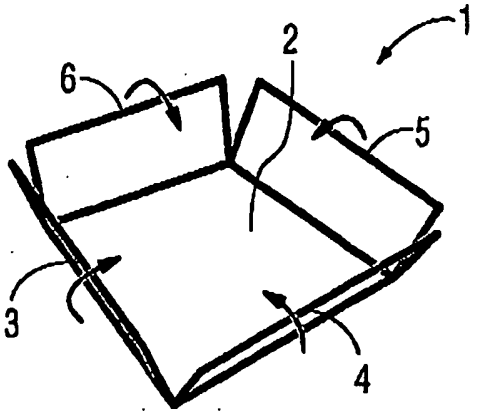


FIG 13a

FIG 13b



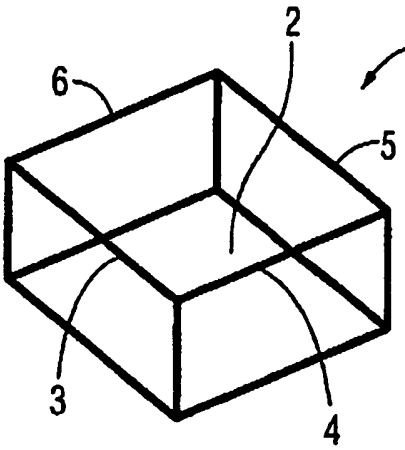
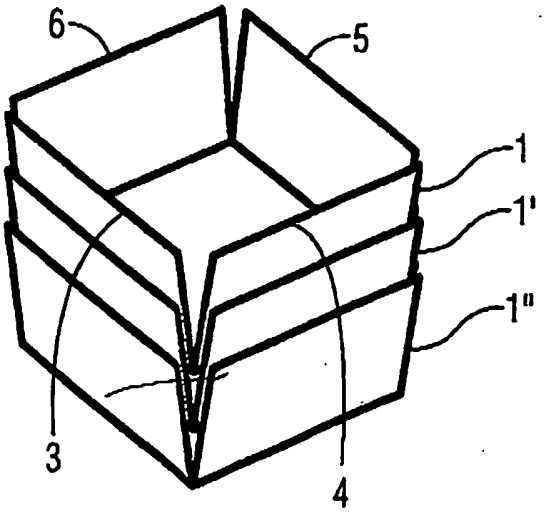


FIG 13c

FIG 13d



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- US 6349877 B1 **[0006]**